Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1. (currently amended) An ion delivery system for a mass spectrometer having an ionization source for providing a continuous stream of ions, and ion trap, a detector and an ion guide for guiding said continuous ion stream from the ionization source toward the ion trap, said ion delivery system comprising.

(a) gating apparatus adapted to be placed between said ion guide and said ion trap for receiving said continuous ion stream and for projecting ions from said continuous ion stream in a stream of ion pulses toward said ion trap; and

(b) scaling apparatus operatively connected to said gating apparatus for selectively controlling the number of ions in each of said ion pulses delivered to said ion trap.

2. (original) The ion delivery system as recited in claim 1, wherein said scaling apparatus comprises at least one ion lens apparatus.

3. (original) The ion delivery system as recited in claim 1, wherein said gating apparatus comprises at least one ion lens apparatus.

4. (original) The ion delivery system as recited in claim 1, wherein said scaling apparatus comprises:

(a) a first ion lens adapted to be located between said ion guide and said gating apparatus; and

(b) a second ion lens adapted to be located between said gating apparatus and said ion trap and for functioning in conjunction with said first ion lens.

5. (original) The ion delivery system as recited in claim 4, further comprising an aperture ion lens adapted to be placed between said second ion lens and said ion trap.

6. (currently amended) The ion delivery system as recited in claim 1, wherein said scaling apparatus is a ion focussing lens adapted to be placed between said ion guide and said gating apparatus and said gating apparatus comprises an ion lens that is in a cooperating ion focussing relationship with said ion focussing lens for focussing said ion pulses.

7. (original) The ion delivery system as recited in claim 6, further comprising an aperture lens adapted to be placed between said gating apparatus and said ion trap.

8. (currently amended) The ion delivery system as recited in claim 7, wherein said aperture lens comprises an aperture that is aligned with the ion lenses of said scaling apparatus and said gating apparatus for receiving at least a portion of each of said ion pulses focussed toward said aperture lens, said aperture lens comprising a deflection surface about said aperture.

9. (currently amended) The ion delivery system as recited in claim 8, wherein said deflection surface slopes away from said ~~focussing apparatus from said~~ aperture.

10. (currently amended) A mass spectrometer comprising:

(a) an ionization source for producing a continuous stream of ions from a sample compound to be analyzed;

(b) an ion trap;

(c) gating apparatus adapted to be placed between said ion guide and said ion trap for receiving said continuous ion stream and projecting ions from said continuous ion stream in a stream of ion pulses toward said ion trap; and

(d) scaling apparatus operatively connected to said gating apparatus for selectively controlling the number of ions in each of said ion pulses delivered to said ion trap.

11. (original) The mass spectrometer as recited in claim 10, wherein said scaling apparatus comprises at least one ion lens apparatus.

12. (original) The mass spectrometer as recited in claim 10, wherein said gating apparatus comprises at least one ion lens apparatus.

13. (original) The mass spectrometer as recited in claim 10, wherein said scaling apparatus comprises:

(a) a first ion lens adapted to be located between said ion guide and said gating apparatus; and

(b) a second ion lens adapted to be located betweens said gating apparatus and said ion trap and for functioning in conjunction with said first ion lens.

14. (original) The mass spectrometer as recited in claim 13, further comprising an aperture ion lens adapted to be placed between said second ion lens and said ion trap.

15. (original) The mass spectrometer as recited in claim 10, wherein said scaling apparatus is a ion focussing lens adapted to be placed between said ion guide and said gating apparatus and said gating apparatus comprises an ion lens that is in a cooperating ion focussing relationship with said ion focussing lens for focussing said pulses.

16. (original) The mass spectrometer as recited in claim 15, further comprising an aperture lens adapted to be placed between said gating apparatus and said ion trap.

17. (original) The mass spectrometer as recited in claim 16, wherein said aperture lens comprises an aperture that is aligned with the ion lenses of said scaling apparatus and said gating apparatus for receiving at least a portion of each of said pulses focussed toward said aperture lens, said aperture lens comprising a deflection surface about said aperture.

18. (currently amended) The mass spectrometer as recited in claim 17, wherein said deflection surface slopes away from said ~~focussing apparatus from said~~ aperture.

19. (currently amended) A method of analyzing ions in a mass spectrometer that includes an ion trap, comprising:

(a) guiding a continuous stream of ions toward said ion trap;

(b) gating said stream for delivering said continuous stream of ions in a stream of ion pulses of a predetermined time duration to said ion trap mass analyzer;

(c) adjustably controlling the quantity of ions in each of said ion pulses to be delivered to said ion trap.

20. (currently amended) The method as recited in claim 19, wherein said step of adjustably controlling the quantity of ions in each of said ion pulses comprises adjustably focusing said ion pulses ~~stream~~ through the opening of an aperture lens located in from of said ion trap mass analyzer so that a predetermined portion of said ion pulses ~~stream~~ passes through said aperture for each of said ion pulses.

21. (new) A mass spectrometer comprising:

(a) an ionization source for producing a continuous ion stream from a sample compound to be analyzed;

(b) gating apparatus for receiving said continuous ion stream and projecting ions from said continuous ion stream in a stream of ion pulses;

(c) an ion trap for receiving said stream of ion pulses and conducting at least on single MS scan of one of said ion pulses to obtain a series of mass spectra and

at least one MS/MS scan of one of said ion pulses in which ions of interest are isolated in the trap and then fragmented and all other ions ejected from the trap; and

(d) scaling apparatus operably connected to said gating apparatus and said ion trap for selectively controlling the number of ions in each ion pulse delivered to said ion trap from said stream of ion pulses, said scaling apparatus being effective to transmit a fraction of the ion pulse delivered to the ion trap for said single MS scan and to transmit a portion of the ion pulse delivered to said ion trap for said MS/MS scan, said portion being substantially larger than said fraction.

22. (new) The mass spectrometer as recited in claim 21, wherein said portion of the ion pulse is the entire ion pulse.

23. (new) The mass spectrometer as recited in claim 21, wherein said gating apparatus is adjustable for selectively controlling the frequency of said ion pulses.

24. (new) A method of analyzing ions in a mass spectrometer that includes an ion trap, comprising:

(a) producing a continuous stream of ions;

(b) converting said continuous stream of ions into a stream of ion pulses;

(c) adjustably focusing each of said ion pulses into said ion trap for selectively controlling the number of ions in each of said ion pulses that enters said ion trap; and

(d) conducting a scan of each of said ion pulses to analyze the ions in the pulse.

25. (new) The method as recited in claim 24, wherein said ion trap conducts at least one single MS scan of an ion pulse to obtain a series of mass spectra and at least one MS/MS scan of an ion pulse in which ions of interest are isolated in the trap and then fragmented and all other ions are ejected from the ion trap and, wherein said method further comprises:

(a) focussing the ion pulse delivered to said ion trap for said single MS scan so that a fraction of the ion pulse enters said ion trap; and

(b) focussing the ion pulse delivered to said ion trap for said MS/MS scan so that a portion of the ion pulse that is substantially larger then said fraction enters said ion trap for said MS/MS scan.

26. (new) The method as recited in claim 25, wherein said portion of the ion pulse is the entire ion pulse.

27. (new) The method as recited in claim 25, wherein the frequency of said stream of pulses is substantially the same for said single MS scan and for said MS/MS scan.

28. (new) The method as recited in claim 25, wherein the frequency of said stream of pulses is within the same optimum linear range for single MS scan and for said MS/MS scan.

29. (new) The method as recited in claim 25, wherein said optimum linear range is from about 10 microseconds to about 500 milliseconds.

30. (new) The method as recited in claim 25, wherein said MS/MS scan is a MS/MSn scan.